



CH2M
501 N. Broadway
St. Louis, MO 63102

March 8, 2022

Ms. Sheila Desai
Work Assignment Manager Section (MCC-IOJ)
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

Subject: Remedial Design Addendum 4, Surrounding Properties
Old American Zinc Plant Superfund Site, Fairmont City, Illinois
Design and Engineering Services (DES) Contract Line Item Number (CLIN) 2
Contract 68HE0318D004
Task Order Number 68HE0521F0068

Dear Sheila,

Enclosed please find the Addendum 4 to the *Old American Zinc Plant Superfund Site Surrounding Properties Remedial Design Basis of Design Report, Revision 1*, which was prepared to address contaminated soil located in the properties surrounding the Facility Area.

Changes to this document will be made pending comments from EPA and other stakeholders. Otherwise, this document was stamped and signed by the Engineer of Record and will serve as the final document.

Please contact me with any questions or concerns at 269-808-5511.

Sincerely,

CH2M

A handwritten signature in black ink, appearing to read 'Sara Maihofer', written over a light blue horizontal line.

Sara Maihofer
Project Manager

Enclosure:

- *Old American Zinc Plant Superfund Site, Surrounding Properties Remedial Design Addendum 4, Fairmont City, St. Clair County, Illinois*



Memorandum

CH2M HILL, Inc.
501 N. Broadway
St. Louis, MO 63102

Subject: Surrounding Properties Remedial Design Addendum 4

Project Name: Old American Zinc Plant Superfund Site, Fairmont City, Illinois

Attention: Sheila Desai/U.S. Environmental Protection Agency (EPA) Region 5

From: CH2M HILL, Inc. (CH2M)

Date: March 8, 2022

DCN: DES-R5-21F0068-0200

This Remedial Design (RD) Addendum 4 was prepared under EPA Design Engineering Services (DES) Contract Line Item Number (CLIN) 2 Contract 68HE0318D004, Task Order Number 68HE0521F0068 and is the fourth addendum to the *Old American Zinc Plant Superfund Site Surrounding Properties Remedial Design Final Basis of Design Report, Revision 1* (BODR; CH2M HILL, Inc. [CH2M] 2018). This RD Addendum 4 presents the design drawings, excavation limits, excavation volumes, and estimated remediation costs for remedial action (RA) at five properties sampled by CH2M during 2021 predesign sampling activities. These five properties are located in the area near the Old American Zinc Facility Area (FA), referred to as the surrounding properties.

Predesign investigations were also performed in the surrounding properties by ENTACT in the early 2000s and by CH2M in 2017, 2018, 2019, and 2020. The properties presented in this addendum are in addition to the previous RD deliverables:

- Sixty-seven surrounding properties and nine alleyways included in the BODR
- Eighty-four properties and one alleyway included in the *Old American Zinc Plant Superfund Site, Surrounding Properties Remedial Design Addendum 1* (CH2M 2019; Addendum 1)
- Twelve properties included in the *Old American Zinc Plant Superfund Site, Surrounding Properties Remedial Design Addendum 2* (CH2M 2020a; Addendum 2)
- Five properties included in the *Old American Zinc Plant Superfund Site, Surrounding Properties Remedial Design Addendum 3* (CH2M 2020b; Addendum 3).

Sample results were compared to the final cleanup levels presented in Table 1, which are set forth in the Record of Decision (EPA 2012). Yard areas of sampled properties that exceed the final cleanup levels are to be remediated. Attachment 1 summarizes analytical results from the 2021 sampling event. Analytical data from previous sampling events are included in either the BODR, Addendum 1, Addendum 2, or Addendum 3. Figure G-002 in Attachment 2 shows the properties included in this addendum for remediation.

As discussed in the BODR, the RA will consist of excavation to a maximum depth of 30 inches. Properties that are designed to the maximum sample depth, which is 24 inches for properties included in this addendum, will be screened using X-ray fluorescence (XRF) at the bottom of the excavation. The XRF results will be compared to action limits determined through the site-specific correlation study,

which was completed in 2019. Pending the XRF screening results, additional excavation may be completed to a maximum depth of 30 inches. A final XRF screening will be performed at 30 inches to determine whether placement of demarcation fabric is required at the base of the 30-inch excavation. None of the yard areas included in this addendum exceeded cleanup levels in the 18- to 24-inch sample interval; therefore, XRF screening will not be required at the bottom of the excavations, and demarcation fabric will not be needed for the properties included in this addendum.

The BODR also states that garden and landscaped areas will be screened with an XRF prior to excavation to prevent removal of plants and shrubs where possible. If the XRF screening results indicate that the garden and/or landscape areas exceed one or more of the action limits determined by the correlation study, it will be excavated to the same depth as the yard area where it is located. Due to the presence of landscaped areas (which includes the area around plants, shrubs, and trees less than 4 inches in diameter) on one property included in this addendum, XRF screening will be required within these areas. Yard areas requiring XRF screening for landscaped areas are indicated in the Design Information table on each property-specific drawing.

Attachment 2 contains the design drawings that show the yard areas requiring remediation, the depth of excavation within each yard area, total excavation volume, and XRF screening requirements. Table 2 summarizes the total excavation volume for each property, maximum exceedance depth for each yard area based on sampling results, and slag observations during the predesign investigation (slag was not observed during predesign sampling at any of the properties included in this addendum). Table 3 summarizes the approximate dimensions of the yard areas requiring remediation for each property.

An estimated 16,384 cubic yards of soil needs to be excavated for the properties included in this design addendum to address arsenic, cadmium, lead, and/or zinc contamination, based on predesign sampling results. Actual excavation quantities will be determined during the RA. The excavated soil will be transported to the FA for staging until it is placed in the consolidation area during the FA RA. This addendum includes costs for seeding the staging pile to stabilize the soils and prevent transport of contaminated dust particles back into the surrounding properties.

There was no change to the design approach presented in the BODR. Therefore, the BODR, design specifications, construction quality assurance plan, and agency consultation documentation presented in that design are applicable to the properties in this design addendum and have not been revised or resubmitted. Attachment 3 contains an engineer's estimate of construction cost. Production rates for construction were reviewed and updated as needed based on recent project experience. Unit rates are based on 2022 pricing and are applied to quantities for the properties included in this addendum. Additional assumptions used for developing the cost estimate are summarized in documents in Attachment 3.

Professional Engineer Certification Statement

I certify that this document and all appendixes and attachments, as applicable, were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons that manage the system or of persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Name of P.E.: Matthew Gavin
Registration No.: 062-056650
Date: March 2, 2022

Matthew Gavin
EXP. 11/30/2023



References

CH2M HILL, Inc. (CH2M). 2018. *Old American Zinc Plant Superfund Site Surrounding Properties Remedial Design Final Basis of Design Report, Revision 1*. December.

CH2M HILL, Inc. (CH2M). 2019. *Old American Zinc Plant Superfund Site Surrounding Properties Remedial Design Addendum 1*. July.

CH2M HILL, Inc. (CH2M). 2020a. *Old American Zinc Plant Superfund Site Surrounding Properties Remedial Design Addendum 2*. January.

CH2M HILL, Inc. (CH2M). 2020b. *Old American Zinc Plant Superfund Site Surrounding Properties Remedial Design Addendum 3*. July.

U.S. Environmental Protection Agency (EPA). 2012. *Record of Decision, Old American Zinc Plant Superfund Site*. September.

Tables

Table 1. Final Cleanup Levels

Old American Zinc Plant Superfund Site Surrounding Properties

Contaminant of Concern	Residential (mg/kg)	Non-Residential (mg/kg)
Arsenic	32	239
Cadmium	37	809
Lead	400	826
Zinc	6,400	306,600

mg/kg = milligrams per kilogram

Table 2. Excavation Depths and Volume of Excavated Material
Old American Zinc Plant Superfund Site, Surrounding Properties

Figure No.	Property Address	Parcel ID(s)	Front/ Section A	Back/ Section B	Middle/ Section C	Side/ Section D	Section E	Section F	Section G	Section H	Section I	Section J	Section K	Section L	Section M	Section N	Section O	Section P	Section Q	Section R	Section S	Section T	Section U	Volume of Excavated Material (cubic yards) ¹	Sod Area (square feet) ¹
			Excavation Depth (in.)	Excavation Depth (in.)	Excavation Depth (in.)	Excavation Depth (in.)	Excavation Depth (in.)	Excavation Depth (in.)	Excavation Depth (in.)	Excavation Depth (in.)	Excavation Depth (in.)	Excavatio n Depth (in.)	Excavatio n Depth (in.)	Excavatio n Depth (in.)	Excavatio n Depth (in.)	Excavatio n Depth (in.)	Excavatio n Depth (in.)	Excavatio n Depth (in.)	Excavatio n Depth (in.)	Excavatio n Depth (in.)	Excavatio n Depth (in.)	Excavatio n Depth (in.)	Excavatio n Depth (in.)		
C-188	█ CANTEEN ST	17-2-20-34-03-301-019	0	0	0	12																		50	4,058
C-189	█ N 43RD ST	02-04.0-313-081	18	12	6	0																		145	4,667
C-190	█ MAPLE AVE	02-08.0-205-084	0	18																				210	3,802
C-191	█ KINGSHIGHWAY	02-04.0-203-096	6	12	12	12	12	12	12	12	0	6	12	12	12	12	12	12	12	12	18	0	0	15,181	411,778
C-192	█ COLLINSVILLE RD	02-04.0-309-001	0	18	12	18																		798	22,000
Total:																								16,384	446,305

Notes:
^a Excavation volumes and sod areas were calculated using the field measurements collected by CH2M in 2022 and are approximate. The volume calculations assume a 4-inch excavation depth under tree drip zones; however, excavation shall be performed to the full excavation depth identified in the table and drawings to the extent possible.

Properties sampled by CH2M in 2021.

Indicates slag was encountered in the yard area during sampling. Slag was not encountered at any of the properties included in this table.

Table 3. Approximate Dimensions of Excavation Areas
Old American Zinc Plant Superfund Site Surrounding Properties

Figure No.	Property Address	Parcel ID(s)	Front/ Section A		Back/ Section B		Middle/ Section C		Side/ Section D		Section E		Section F		Section G		Section H		Section I		Section J		Section K		Section L		Section M		Section N		Section O		Section P		Section Q		Section R		Section S		Section T		Section U							
			Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)	Length (Ft.)	Width (Ft.)								
C-188	CANTEEN ST	17-2-20-34-03-301-019							82.5	47.5																																								
C-189	N 43RD ST	02-04.0-313-081	28	75	42	75	33.5	75																																										
C-190	MAPLE AVE	02-08.0-205-084			76	50																																												
C-191	KINGSHIGHWAY	02-04.0-203-096	161	169	145	169	145	169	145	169	235	169	142	267	182	169	142	50			436	184	179	175	125	173	145	173	145	173	150	173	140	242	125	173	145	173	125	461										
C-192	COLLINSVILLE RD	02-04.0-309-001			55	165	55	165	55	165																																								

Notes:
^The dimensions presented in this table are based on field measurements collected by CH2M in 2022 and are approximate. Refer to property drawings for more detailed yard area shapes and yard area locations for excavation.

Attachment 1
Arsenic, Cadmium, Lead, and Zinc Results for
Properties to be Remediated

Table A-1. Laboratory Analytical
Results for Properties Less than 5,000
Old American Zinc Plant Superfund Site

		Arsenic (mg/kg)															
		Back				Front				Middle				Side			
Property Address	Property ID	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"
████ KINGS HIGHWAY	1066	4.9	7	7.6	8.1	5.3	7.5	1.2 U	6.5	4.7	6.5	7.4	7.2	--	--	--	--
████ KINGS HIGHWAY	1067	6.7	6.5	6.8	6.2	5.9	7.5	6.8	4.6	6	6.8	6.1	5.6	--	--	--	--
████ MAPLE AVE	301	8.8	10	15	9.2	6	11	9	11	--	--	--	--	--	--	--	--
████ NORTH 61ST ST	1007	8.8	7.1	6.6	8.1	6.4	7.5	6.2	6.3	--	--	--	--	6.6	8	5.5	6.8
FORUM DR	1061	7.4	6.8	6.4	5.2	16	9.3	7.5	6.6	11	14	9.5 J	5.9	--	--	--	--
FORUM DR	1062	18	5.6	7	5.2	8.3	6	5.7	5.3	17	12	6.4	6.4	--	--	--	--
FORUM DR	1063	15	8.3	14	7.9	10	9	6.9	5.4	12	9.8	6.9	6.1	--	--	--	--
FORUM DR	1064	10	9.5	7.2	5.9	7.3	9.2	6	6	7.5	8.5	7	5.6	--	--	--	--
FORUM DR	1065	8.9	7.4	6	6.1	8.7	11	7.1 J-	5.5	6.1	7.9	5.9	6.1	--	--	--	--

Notes:
" = inches below ground surface
'-' = no data for depth interval or sample section

J = the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
U = the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration
Results equal to or exceeding the cleanup levels are shaded.

Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.
mg/kg = milligrams per kilogram

Table A-1. Laboratory Analytical
Results for Properties Less than 5,000
Old American Zinc Plant Superfund Site

		Cadmium (mg/kg)															
		Back				Front				Middle				Side			
Property Address	Property ID	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"
<div></div> KINGS HIGHWAY	1066	9.5	19	23	24	11	15	0.61 U	4.1	11	14	18	19	--	--	--	--
<div></div> KINGS HIGHWAY	1067	13	8.7	3.8	3.1	11	17 J	12 J	2	13	8.8	3.2	2.2	--	--	--	--
<div></div> MAPLE AVE	301	5.3	6.5	12	5.7	2.6	7.8	5.6	6	--	--	--	--	--	--	--	--
<div></div> NORTH 61ST ST	1007	2.5	1.8	1.7	2.5	2.5	2.3	2.6	3.8	--	--	--	--	2.2	2	0.65	3.3
FORUM DR	1061	20	19	6	2.2	27	22	1.4	3.1	20	25	8.4	1	--	--	--	--
FORUM DR	1062	16	10	3.9	0.78	28	7.9	1.1	0.62	25	19	4.1	1.6	--	--	--	--
FORUM DR	1063	26	13	6	3.7	26	13	5.2 J-	1.1	24	13	3.1	1.2	--	--	--	--
FORUM DR	1064	24	19	8.4	1.2	19	20	3.9	3.5	24	18	7.3	3.4	--	--	--	--
FORUM DR	1065	24	13	4.2	0.8	28	26	6.2 J-	2.3	23	17	2.5	0.96	--	--	--	--

Notes:
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'-' = no data for depth interval or sample section

J = the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
U = the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration
Results equal to or exceeding the cleanup levels are shaded.

Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.
mg/kg = milligrams per kilogram

Table A-1. Laboratory Analytical
Results for Properties Less than 5,000
Old American Zinc Plant Superfund Site

Lead (mg/kg)																	
		Back				Front				Middle				Side			
Property Address	Property ID	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"
████ KINGS HIGHWAY	1066	54	79	58	96	64	55	1.2 U	24	97	70	89	59	--	--	--	--
████ KINGS HIGHWAY	1067	54	32	20	18	61	77	35 J	11	68	31	16	19	--	--	--	--
████ MAPLE AVE	301	180	170	560	150	87	130	140	140	--	--	--	--	--	--	--	--
████ NORTH 61ST ST	1007	80	36	35	37	58	45	39	50	--	--	--	--	90	28	55	45
FORUM DR	1061	86	51	26	13	110	66	15	19	76	77	26	11	--	--	--	--
FORUM DR	1062	65	18	17	8.5	110	18	12	9.6	93	51	19	13	--	--	--	--
FORUM DR	1063	100	26	21	17	110	32	32	11	87	48	16	12	--	--	--	--
FORUM DR	1064	97	51	16	14	87	61	19	18	110	56	22	19	--	--	--	--
FORUM DR	1065	93	40	22	12	120	70	22 J	16	85	35	15	12	--	--	--	--

Notes:
" = inches below ground surface
'-' = no data for depth interval or sample section

J = the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

U = the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration
Results equal to or exceeding the cleanup levels are shaded.

Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

mg/kg = milligrams per kilogram

Table A-1. Laboratory Analytical
Results for Properties Less than 5,000
Old American Zinc Plant Superfund Site

		Zinc (mg/kg)															
		Back				Front				Middle				Side			
Property Address	Property ID	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"
KINGS HIGHWAY	1066	550	910	890	850	690	780	7.3 U	220	630	700	930	760	--	--	--	--
KINGS HIGHWAY	1067	710	390	200	170	630	910	470 J	110	770	370	160	170	--	--	--	--
MAPLE AVE	301	610	630	3100	780	310	720	580	550	--	--	--	--	--	--	--	--
NORTH 61ST ST	1007	330	150	150	180	200	160	170	210	--	--	--	--	210	130	66	190
FORUM DR	1061	960	880	290	130	1300	1100	120	200	1000	1100	400 J-	73	--	--	--	--
FORUM DR	1062	860	390	210	65	1300	470	160	72	1200	880	250	120	--	--	--	--
FORUM DR	1063	1200	740	350	210	1300	710	380 J-	89	1200	730	280	110	--	--	--	--
FORUM DR	1064	1100	960	510	97	860	900	250	210	1100	880	430	200	--	--	--	--
FORUM DR	1065	1100	680	300	82	1300	1100	350 J-	160	1000	750	190	77	--	--	--	--

Notes:
" = inches below ground surface
'-' = no data for depth interval or sample section

J = the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

U = the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration
Results equal to or exceeding the cleanup levels are shaded.

Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

mg/kg = milligrams per kilogram

Table A-2. Laboratory Analytical Results
for Properties Greater than 5,000
Square Feet or 1 Acre
Old American Zinc Plant Superfund Site

		Arsenic (mg/kg)															
		A				B				C				D			
Property Address	Property ID	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"
█ NORTH 34TH ST	078	7.1	8.3	7.3	6.9	8.3	8.1	7.7	6.9	9.3	8.9	8.7	6.6	12	13	8.4	7.9
█ NORTH 43RD ST	1070	9	52	38	9	9.6	12	9.4	13	12	11	12	9.7	8.1	8.9	10	8.9
█ NORTH 41ST ST	858	8.8	10	8.2	8.1	5.5	9.6	8.2	7.6	5.6	7.9	7.2	8.1	6.5	6.5	7.7	9.1
█ KINGS HIGHWAY	1069	12	12	9.7	8.9	13	6.8	13	7.5	11	11	9.8	7.7	13	12	9.7	6.8
█ NORTH 62ND ST	220	7.3	6.4	9.9	9.7	9.3	8.9	9.7	8.3	8.4	9.8	10	9.1	9.2	10	8.9	8.9
█ KINGS HIGHWAY	1068	10	7.9	8.8	7.1	5.2	6.1	11	10	9.3	8.7	6.6	6.2	9.6	9.9	8	6.3
█ NORTH 60TH ST	240	9	10	10	9.3	8.7	13	8	14	8.2	9.1	9.7	9.6	9.8	9	8.2	8.5
█ CANTEEN ST	1025	8.3	8.9	9.1	7.8	9.3	8.3	8	7.1	8	10	9.7	8.8	7.3	11	8.3	8.2
█ COOKSON RD	1071	8.4	8.6	11	13	9.6	8.1	9	8.4	17	10	8.2	7.6	12	9.7	8.1	8.4
█ COLLINSVILLE RD	836	4.2	7.9	10	7.3	4.2	6.9	19 J	7.4	2.3	8.8	9	5.1	12	13	11 J	5.6
█ COLLINSVILLE RD	1058	5.2	6.7	6.3	6.9	3.3	5.2	6.5	7.2	6.7	5.9	6.9	6.2	9.9	10	8.6	7.1

Notes:
" - inches below ground surface
'-' - no data for depth interval or sample section
J - the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
U - the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five Results equal to or exceeding the cleanup levels are shaded.
Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.
mg/kg - milligrams per kilogram

Table A-2. Laboratory Analytical Results
for Properties Greater than 5,000
Square Feet or 1 Acre

Old American Zinc Plant Superfund Site

		Cadmium (mg/kg)															
		A				B				C				D			
Property Address	Property ID	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"
█ NORTH 34TH ST	078	3.5	3.1	1.2	0.35	4.8	3.9	1.5	0.72	5.2	4.2	1.7	0.67	5	3.4	1.6	1.6
█ NORTH 43RD ST	1070	5	17	15	3.1	4	35	9.6 J	1	14	13	13	2.5 J	1.9	3.2	7.8	5.1
█ NORTH 41ST ST	858	32	17	5.6	3.4	6.7	14	7.5	4.7	7.2	9.4	5.9	3.5	9.1	11	4.8	7.6
█ KINGS HIGHWAY	1069	28	26	14	3.3	34	1.9	34	1.9	30	24	11	1.7	35	30	14	1.7
█ NORTH 62ND ST	220	1.9	2.2	4.8	3.4	4.5	3.6	4.9	1.3	4.3	5.3	3.8	2.7	4.8	5.1	1.9	1.1
█ KINGS HIGHWAY	1068	29	12	10 J	6.9	4.7	8.8	25	18	9.5	13	6.9	1.2	26	20	21	2.3
█ NORTH 60TH ST	240	6.7	6.8	5	1.7	6.3	8.6	1.8	9.2	5.5	5.7	6.5	3.6	5	4.7	3	1.3
█ CANTEEN ST	1025	5.1	6.5	6.7	1.8	7.6	8.3	2.2	1.4	9.3	10	7.3	2.3	5.9	7.3	1.8	1.4
█ COOKSON RD	1071	1.8	8.7	13	13	12	4.4	6.4	1.8	12	8.3	3 J	0.81	11	4.3	3.4	2.9
█ COLLINSVILLE RD	836	3	21	22	28	4.4	16	12	8.6	5.8	50	19	6.6	29	36	44 J-	15
█ COLLINSVILLE RD	1058	10	8.5	4.7	0.72	3.8	7.2	1.6	5	2.9	7.1	2.4	2.5	16	6.3	8.4	3

Notes:
" - inches below ground surface
'-' - no data for depth interval or sample section
J - the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
U - the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five Results equal to or exceeding the cleanup levels are shaded.
Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.
mg/kg - milligrams per kilogram

Table A-2. Laboratory Analytical Results
for Properties Greater than 5,000
Square Feet or 1 Acre

Old American Zinc Plant Superfund Site

Lead (mg/kg)																	
		A				B				C				D			
Property Address	Property ID	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"
█ NORTH 34TH ST	078	110	85	44	18	130	130	46	20	200	180	75	34	160	190 J	43	51
█ NORTH 43RD ST	1070	85	260	370	230	270 J	520	180	78	430	220	270	240 J+	84	140	280	91
█ NORTH 41ST ST	858	160	120	29	32	61	110	67	42	65	74	45	32	90	71	100	26
█ KINGS HIGHWAY	1069	110	97	36	23	120	13	120	15	130	82	44	15	150	110	52	15
█ NORTH 62ND ST	220	33	25	38	30	50	42	38	18	41	46	31	29	46	39	20	20
█ KINGS HIGHWAY	1068	240	62	38 J	30	43	57	84	49	46	56	25	14	94	75	49	16
█ NORTH 60TH ST	240	68	57	26	19	66	75	21	61	51	45	42	23	53	36	26	18
█ CANTEEN ST	1025	71	56	62	22	75	83	29	25	200	140	82	31	73	460	24	40
█ COOKSON RD	1071	61	140	190	360	160	180	180	28	310 J	110	47	13	230	130	57	58
█ COLLINSVILLE RD	836	55	230	330	120	51	130	510 J	170 J	43	190	200	44	370	230	140	40
█ COLLINSVILLE RD	1058	210	190	130	20	92	130	24	66	120	140	59	57	250	390	93	86

Notes:
" - inches below ground surface
'-' - no data for depth interval or sample section
J - the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
U - the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five Results equal to or exceeding the cleanup levels are shaded.
Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.
mg/kg - milligrams per kilogram

Table A-2. Laboratory Analytical Results
for Properties Greater than 5,000
Square Feet or 1 Acre

Old American Zinc Plant Superfund Site

Zinc (mg/kg)																	
		A				B				C				D			
Property Address	Property ID	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"
█ NORTH 34TH ST	078	320	320	170	99	370	340	220	110	540	450	240	120	650	460	200	200
█ NORTH 43RD ST	1070	470	1600	1400	840	410	1400	960	120	1200	1200	1100	330 J	230	290	730	370
█ NORTH 41ST ST	858	1000	710	440	450	410	590	540	370	480	480	440	320	610	560	250	350
█ KINGS HIGHWAY	1069	1100	1000	540	190	1200	260	1200	150	1100	1000	600	170	1700	1300	740	160
█ NORTH 62ND ST	220	150	130 J	240	190	290	220	230	120	250	260	200	160	250	240	150	110
█ KINGS HIGHWAY	1068	2400	530	590 J	510	280	370	970	880	580	940	560	160	1200	950	1100	170
█ NORTH 60TH ST	240	380	360	310	240	310	400	200	370	320	300	310	280	290	270	190	120
█ CANTEEN ST	1025	370	390	420	200	440	510	230	190	540	550	440	300	380	530	240	140
█ COOKSON RD	1071	240	560	840	950	730	380	600	190	780	550	280	100	880	480	420	420
█ COLLINSVILLE RD	836	380	1500	1800	1500	340	770	1100	1400	450	2800	1700	1100	2200	2000	1500 J	1000
█ COLLINSVILLE RD	1058	600	600	350	94	330	430	150	300	280	450	200	270	830	400	420	270

Notes:
" - inches below ground surface
'-' - no data for depth interval or sample section
J - the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
U - the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five Results equal to or exceeding the cleanup levels are shaded.
Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.
mg/kg - milligrams per kilogram

Table A-3. Laboratory
Old American Zinc Plant

	KINGS HIGHWAY (1059)																FORUM DR (1060)															
	Arsenic (mg/kg)				Cadmium (mg/kg)				Lead (mg/kg)				Zinc (mg/kg)				Arsenic (mg/kg)				Cadmium (mg/kg)				Lead (mg/kg)				Zinc (mg/kg)			
Section	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"
A	9.6	7.9	9.4	9.5	39	15 J	21	1.8	130	71 J	54 J	19	1800	800 J	910	150	7	6.9	6.6	7.1	8.9	5.1	8	21	59	38	40	59	530	320	400	740
B	9.5	11	8.8	6.9	44	45	5.6	0.96	150	160	24	12	1700	1700	390	230	7.7	6.3	6.7	5.8	16 J	4.2 J	3.7	2.8	71 J	27 J	26	17	910	290 J	260	150
C	14	12	7	10	66	43	18	27	230	65	38 J	110	2400	2000	1400	1200	9	9.6	6.5	6.2	30	23	4	0.81	120	110	16	12	1300	1200	210	92
D	11	16	7.3	5.7	68	81	27	6.8	220	370	41	11	2900	3300	1600	1000	19	11	8.7	5.8	16	20	27	8.2	73	70	95	18	770	830	1100	530
E	15	14	7.3	7.2	91	75	20	4.5	300	260	19	22	3700	3300	1200	640	7.6	7.7	6.6	5.9	21	26	20 J+	12	130	130	75	36	1000	1100	790	620
F	14	9.6	8.6	8.8	99	51	26	4.7	480	130	30	19	2800	2100	2000	760	6.1	6.1 J-	5.3	7.7	7.4	10	13	20	61	72	78	56	470	490	590	820
G	9.8	10	8.5	8	45	41	9.1	2.3	150	130	25	19	1900	1700	550	180	5.4	5.9	6.3	6.8	4.8	7.2	13	16	37	30	51	58	290	390	600	680
H	17	9.8	9.2	7.7	97	45	33	7.5	400	57	27	13	2700	1700	1800	930	10	9.3	9.4	10	31	29	25	24	160	100	82	100	1300	1200	1200	1100
I	9.3	10	7.9	8	37	36	16	2.7	130	120	19	17	1400	1400	800	390	8.1	11	12	7.8	22	30	11	5.8	94	100	52	27	1000	1400	890	800
J	10	8.6	7.9	7.3	41	31	11	1.4	150	57	55	18	1800	1300	720	150	8.5	9	11	7.8	20	32	31	10	110	100	110	50	960	1200	1400	720
K	12	10	8.2	7.4	62	53	12	3.8	230	150	29	17	2600	2100	660	310 J+	7.3	7.2	6.5	7.9	21	29	22	7.4	110	110	71	24	970	1100	870	620
L	8.4	10	7.1	7.3	34	39	3.2	0.81	130	130	15	14	1500	1600	320	92	6.5	6.8	6.8	6.9	18	19	16	7.1	85	71	58	18	820	810	700	410
M	7.7	8.9	7.2	8.8	40	40	9.7	0.85	150	120	45	16 J+	1900	1900	560	90	4.9	7.8	5.1	4.8	12	19	14	7.7	53	64	25	16	500	750	630	290
N	11	9.9	7.7	7	50	48	14	3.9	220	220	32	17	2300	2300	840	320																
O	13	9	7.9	6.5	67	40	18	8.5	230	77	58	15	2900	1800	1100	610																
P	13	9	6.8	7.2	67	51	17	16	250	98	27	27	2200	1200	1000	780																
Q	12	14	8.6	9	38	43	6.8	1.6	150	200	27	20	1700	2000	520	210																
R	8.1	9.4	9.1	7.7	46	49	4.8	1.2	190	190	27	15	2000	2000	350	140																
S	8.2	9.5	9.3	6.3	39	55	45	5.2	200	220	120	19	2100	2800	2000	300																
T	9.8	11	6.9	6.9	35	35	5.8	2.7	160	120	23	18	1500	1300	430	450																
U	5.7	8.9	8.2	7.3	16	29	15	2.7	85	90	48	20	760	1100	680	180																

Notes:

" - inches below ground surface

'-' - no data for depth interval or sample section

J - the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

U - the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration

mg/kg - milligrams per kilogram

Results equal to or exceeding the cleanup levels are shaded.

Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

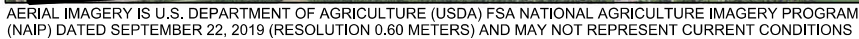
Attachment 2
Design Drawings

FAIRMONT CITY, ST. CLAIR AND
MADISON COUNTIES, ILLINOIS



PROJECT LOCATION

SURROUNDING PROPERTIES

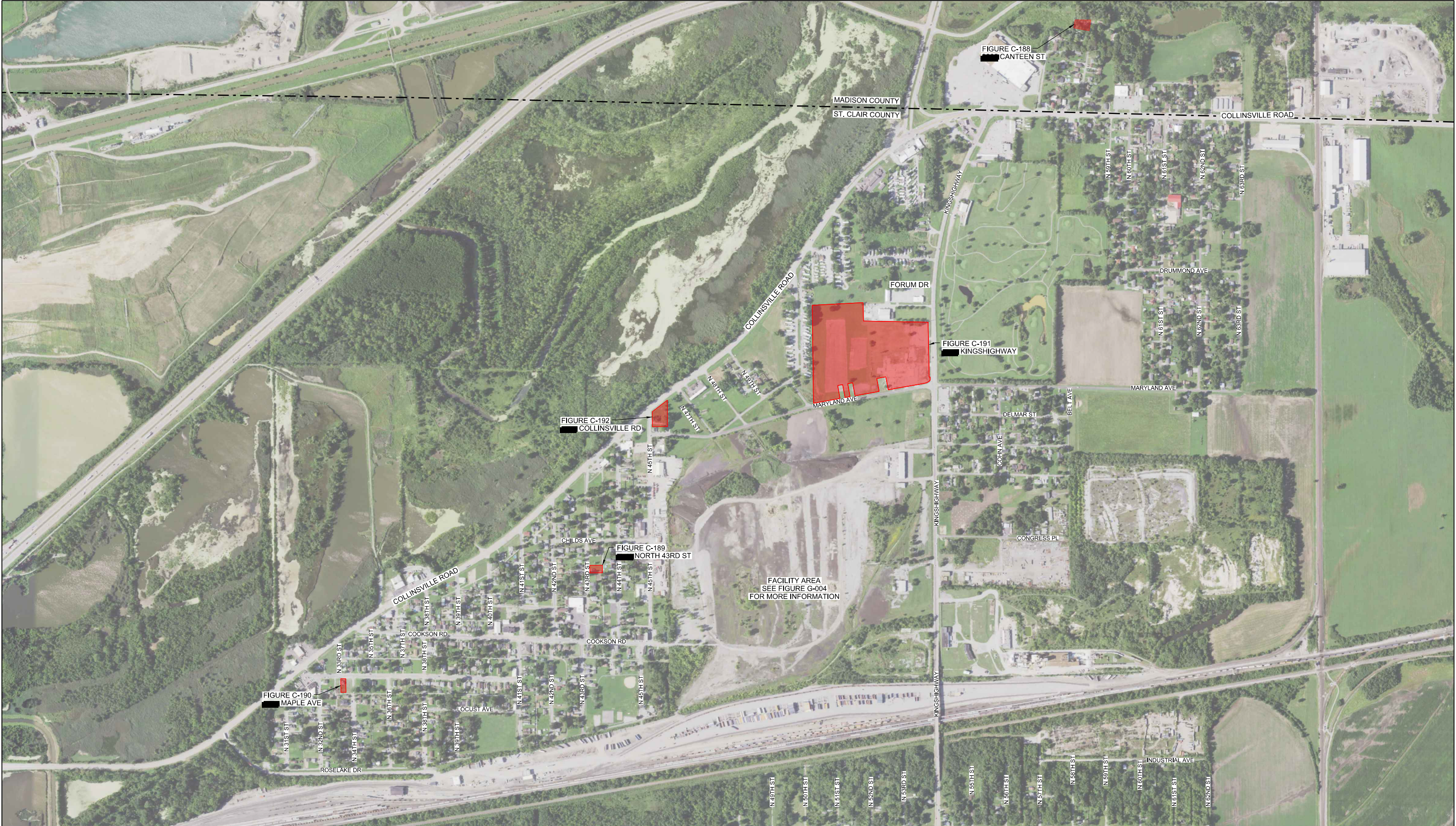


LOCATION MAP

PLOT TIME:

PLOT DATE:

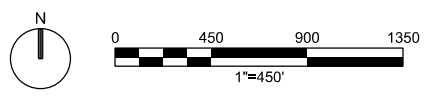
REUSE OF DOCUMENTS:	K. VAUGHAN	N. LINDHOLM	M. GRAVIN
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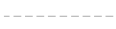


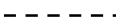





NOTE: AERIAL IMAGERY IS U.S. DEPARTMENT OF AGRICULTURE (USDA) FSA NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP) DATED SEPTEMBER 22, 2019 (RESOLUTION 0.60 METERS) AND MAY NOT REPRESENT CURRENT CONDITIONS

FIGURE G-002
PROPERTIES TO BE REMEDIATED

OLD AMERICAN ZINC PLANT SUPERFUND SITE
FINAL DESIGN - ADDENDUM 4 SUBMITTAL MARCH 2022
REVISION - 0



LEGEND

	TREE		ROAD OR SIDEWALK
	SHRUB		BUILDING (MAJOR & MINOR)
	TREE STUMP		GARDEN
	ITEM TO BE REMOVED		LOT DIVIDE
	EXCAVATION		PROPERTY LINE
			EXCAVATION LIMITS
			TREE DRIP LINE
			WOOD FENCE
			CHAIN LINK FENCE
			WROUGHT IRON FENCE
			VINYL/DECORATIVE FENCE

ABBREVIATIONS

A/C	AIR CONDITIONER
CY	CUBIC YARDS
DIA, Ø	DIAMETER
MAX	MAXIMUM
MIN	MINIMUM
(TYP)	TYPICAL
USEPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

GENERAL SITE NOTES:

- 1) TREES AND SHRUBS WILL BE REPLACED WITH TREES AND SHRUBS OF SIMILAR SPECIES AND QUANTITIES REMOVED. REPLACEMENT TREES WILL BE 2-INCH CALIPER TREES OF SAME SPECIES AS PRACTICABLE.
- 2) WORK SHOWN ON DRAWINGS TO BE COMPLETED ACCORDING TO SPECIFICATIONS.
- 3) YARD AREA NOMENCLATURE SHOWN ON DRAWINGS IS BASED ON NAMING CONVENTIONS FROM SAMPLING EVENTS PERFORMED BY CH2M.
- 4) UNDERGROUND AND OVERHEAD UTILITIES ARE NOT SHOWN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE PRIOR TO CONSTRUCTION.
- 5) TOTAL EXCAVATION VOLUME SHOWN ON DRAWINGS ASSUMES A 4-INCH EXCAVATION DEPTH WITHIN TREE DRIP ZONES; HOWEVER, EXCAVATION WILL BE PERFORMED TO THE FULL EXCAVATION DEPTH IDENTIFIED IN THE DRAWINGS, TO THE EXTENT POSSIBLE.

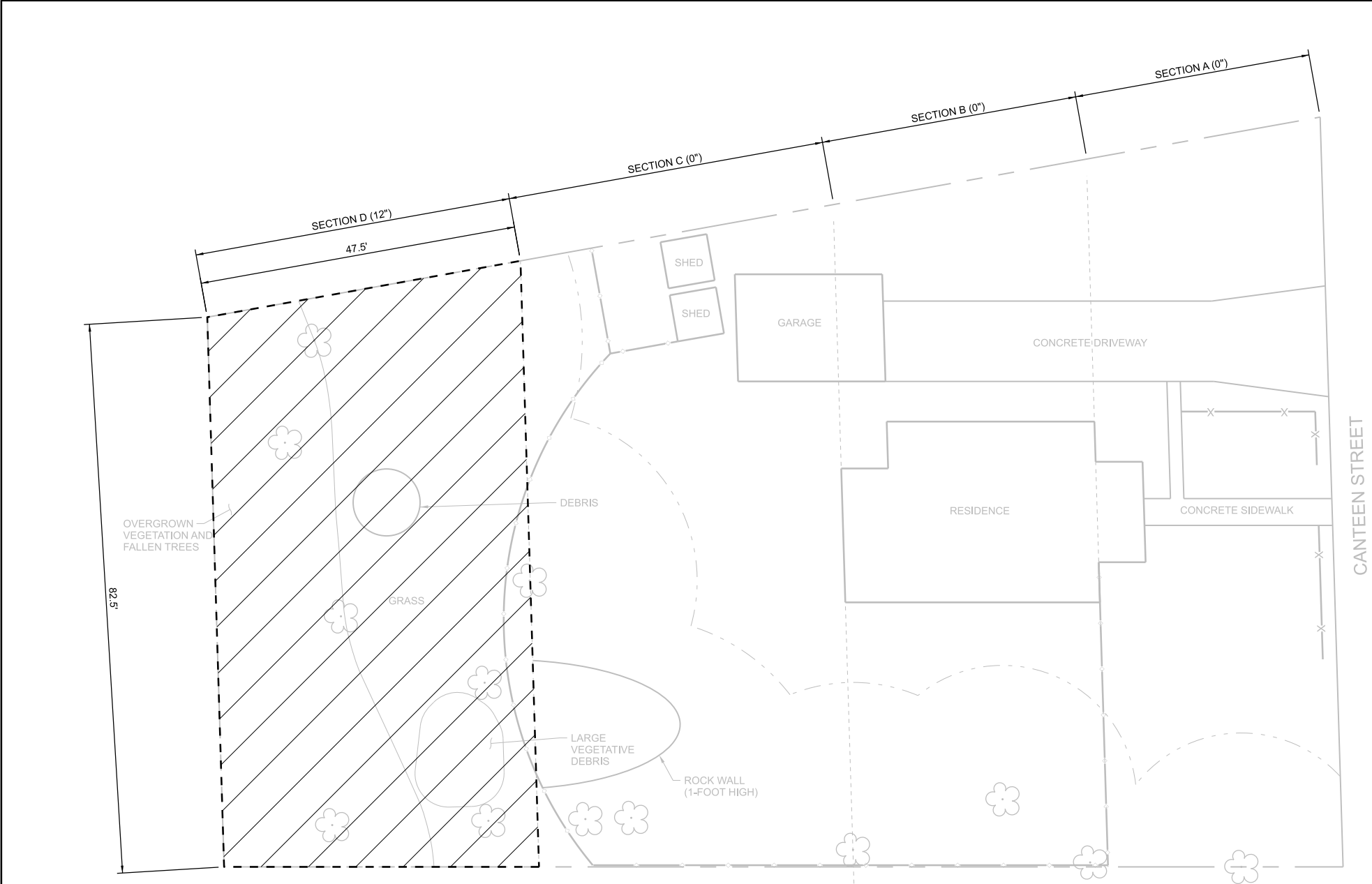
FIGURE G-003 LEGEND

OLD AMERICAN ZINC PLANT SUPERFUND SITE
FINAL DESIGN - ADDENDUM 4 SUBMITTAL MARCH 2022
REVISION - 0











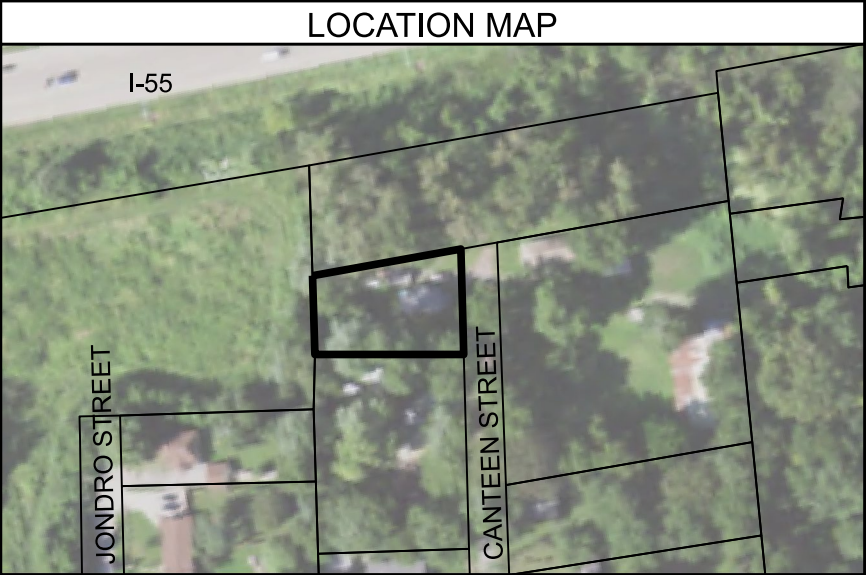
FIGURE G-004
PROPOSED STOCKPILE AND STAGING AREAS

OLD AMERICAN ZINC PLANT SUPERFUND SITE
FINAL DESIGN - ADDENDUM 4 SUBMITTAL MARCH 2022
REVISION - 0

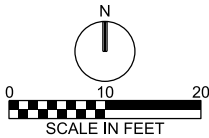


DESIGN INFORMATION				
	SECTION A	SECTION B	SECTION C	SECTION D
EXCAVATION DEPTH	0"	0"	0"	12"
XRF EXCAVATION BOTTOM	NO	NO	NO	NO
XRF LANDSCAPED AREA	NO	NO	NO	NO
SLAG OBSERVED	NO	NO	NO	NO
EXCAVATION VOLUME	50 CY			
SOD AREA	4,058 SF			

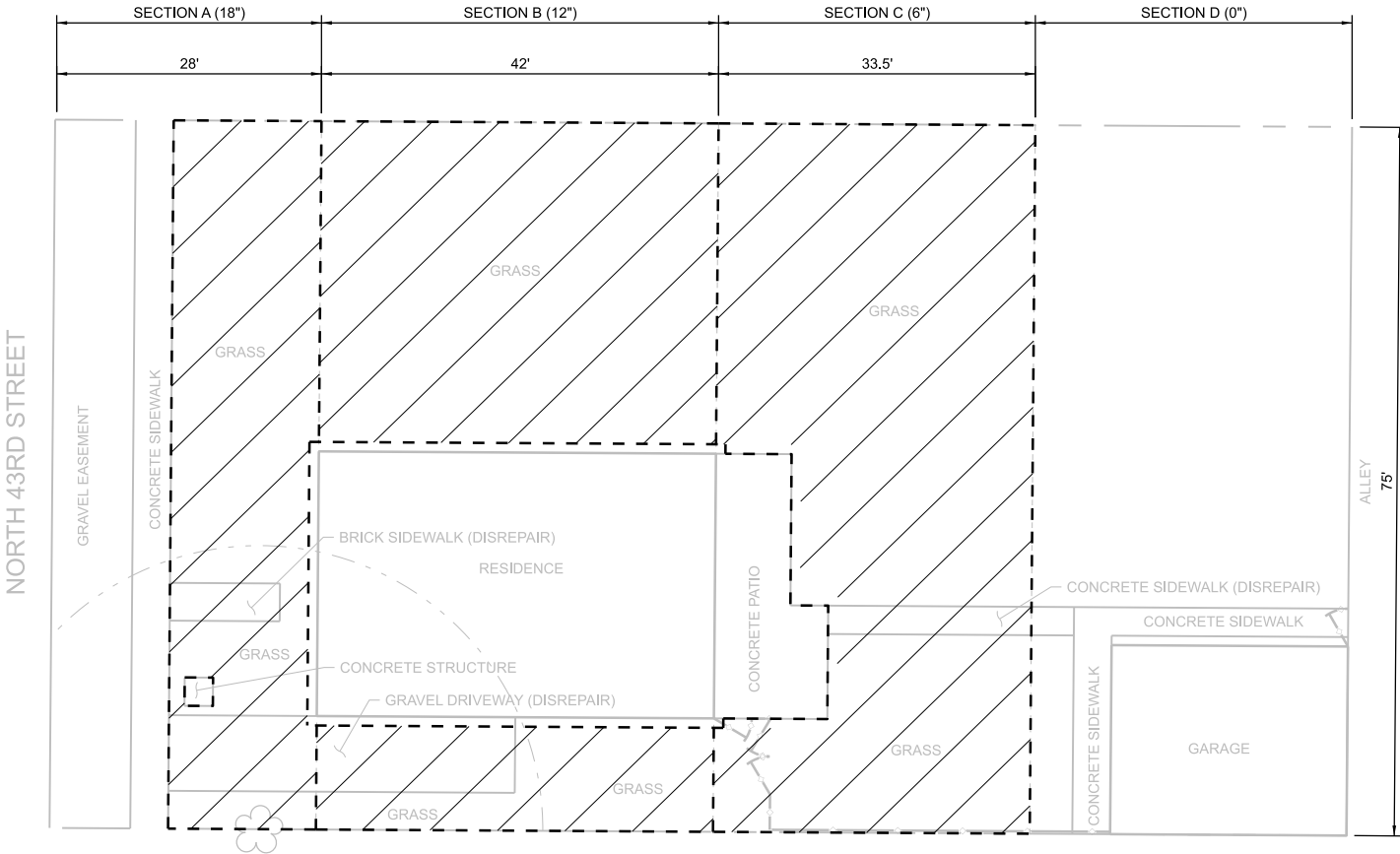
LEGEND					
	TREE		EXCAVATION		PROPERTY LINE
	SHRUB		ITEM TO BE REMOVED		TREE DRIP LINE
					BUILDING
					YARD AREA DIVIDE










- GENERAL NOTES**
1. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM MADISON AND ST. CLAIR COUNTIES AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 2. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
 3. PROPERTY AND EXCAVATION DIMENSIONS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY AND SHOULD BE CONSIDERED APPROXIMATE. FIELD DETERMINATION OF YARD AREA DIVIDES SHOULD BE BASED ON YARD AREA DIVIDE LOCATION RELATIVE TO PROPERTY FEATURES AS SHOWN ON THE FIGURE.
 4. AERIAL IMAGERY IS U.S. DEPARTMENT OF AGRICULTURE (USDA) FSA NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP) DATED SEPTEMBER 22, 2019 (RESOLUTION 0.60 METERS) AND MAY NOT REPRESENT CURRENT CONDITIONS.

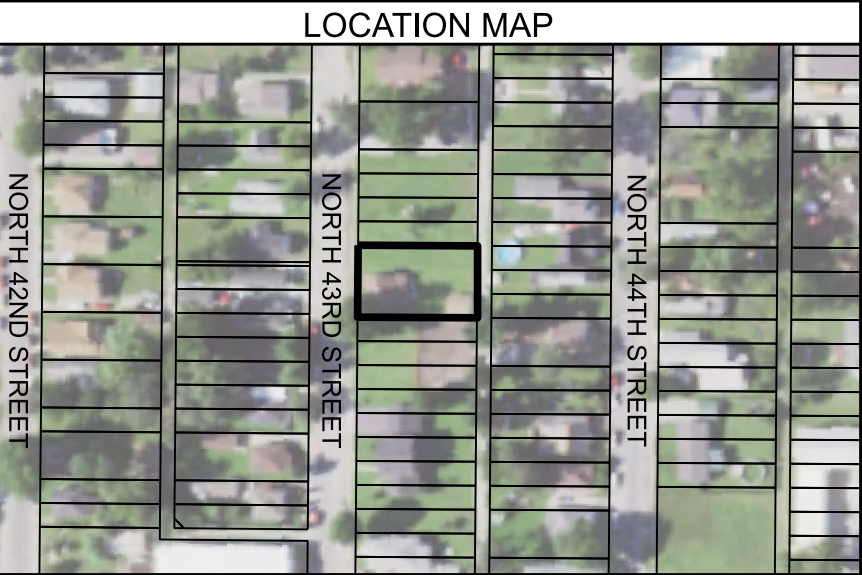


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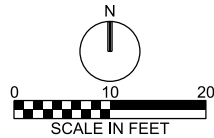


DESIGN INFORMATION				
	SECTION A	SECTION B	SECTION C	SECTION D
EXCAVATION DEPTH	18"	12"	6"	0"
XRF EXCAVATION BOTTOM	NO	NO	NO	NO
XRF LANDSCAPED AREA	NO	NO	NO	NO
SLAG OBSERVED	NO	NO	NO	NO
EXCAVATION VOLUME	145 CY			
SOD AREA	4,667 SF			

LEGEND					
	TREE		EXCAVATION		PROPERTY LINE
	SHRUB		ITEM TO BE REMOVED		TREE DRIP LINE
					BUILDING
					YARD AREA DIVIDE



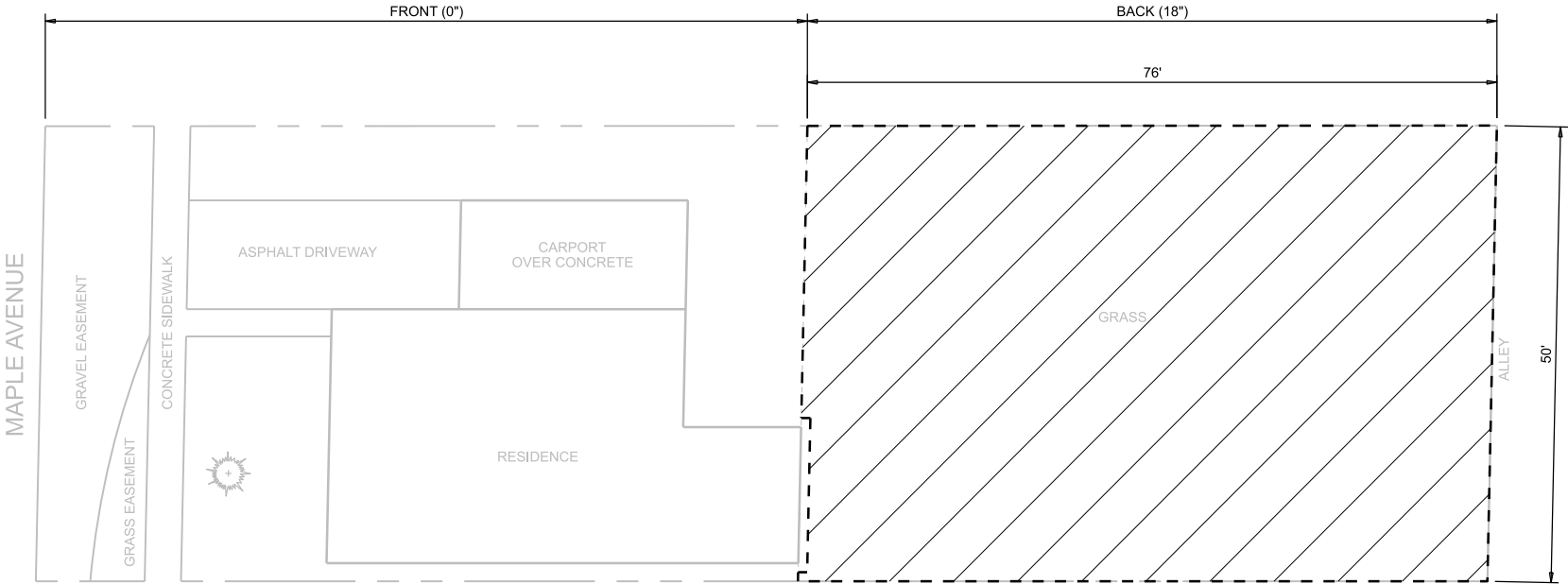
GENERAL NOTES	
1.	PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM MADISON AND ST. CLAIR COUNTIES AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
2.	PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
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4.	AERIAL IMAGERY IS U.S. DEPARTMENT OF AGRICULTURE (USDA) FSA NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP) DATED SEPTEMBER 22, 2019 (RESOLUTION 0.60 METERS) AND MAY NOT REPRESENT CURRENT CONDITIONS.








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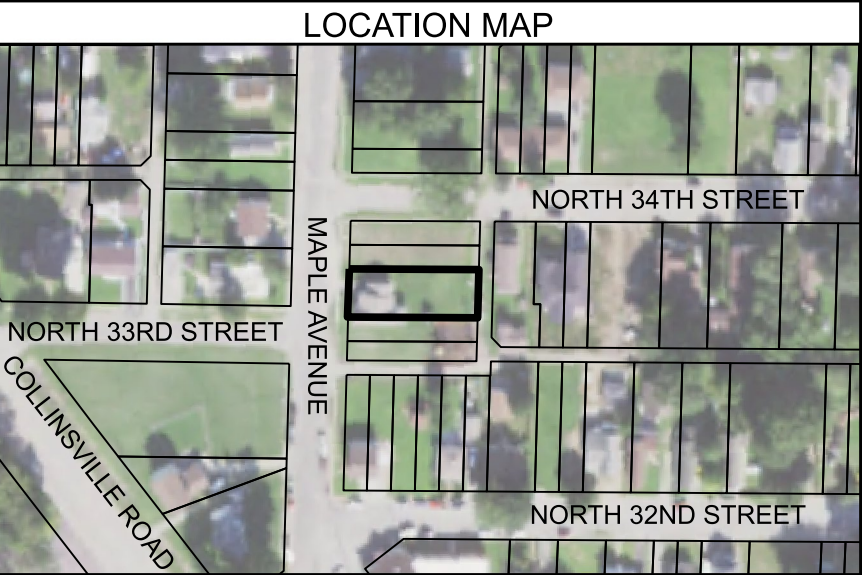
FIGURE C-189
NORTH 43RD STREET
PARCEL **NON-RESPONSIVE**
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FINAL DESIGN - ADDENDUM 4 SUBMITTAL MARCH 2022
REVISION - 0



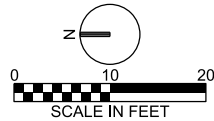


DESIGN INFORMATION		
	FRONT	BACK
EXCAVATION DEPTH	0"	18"
XRF EXCAVATION BOTTOM	NO	NO
XRF LANDSCAPED AREA	NO	NO
SLAG OBSERVED	NO	NO
EXCAVATION VOLUME	210 CY	
SOD AREA	3,802 SF	

LEGEND			
	TREE		EXCAVATION
	SHRUB		ITEM TO BE REMOVED
			PROPERTY LINE
			TREE DRIP LINE
			BUILDING
			YARD AREA DIVIDE



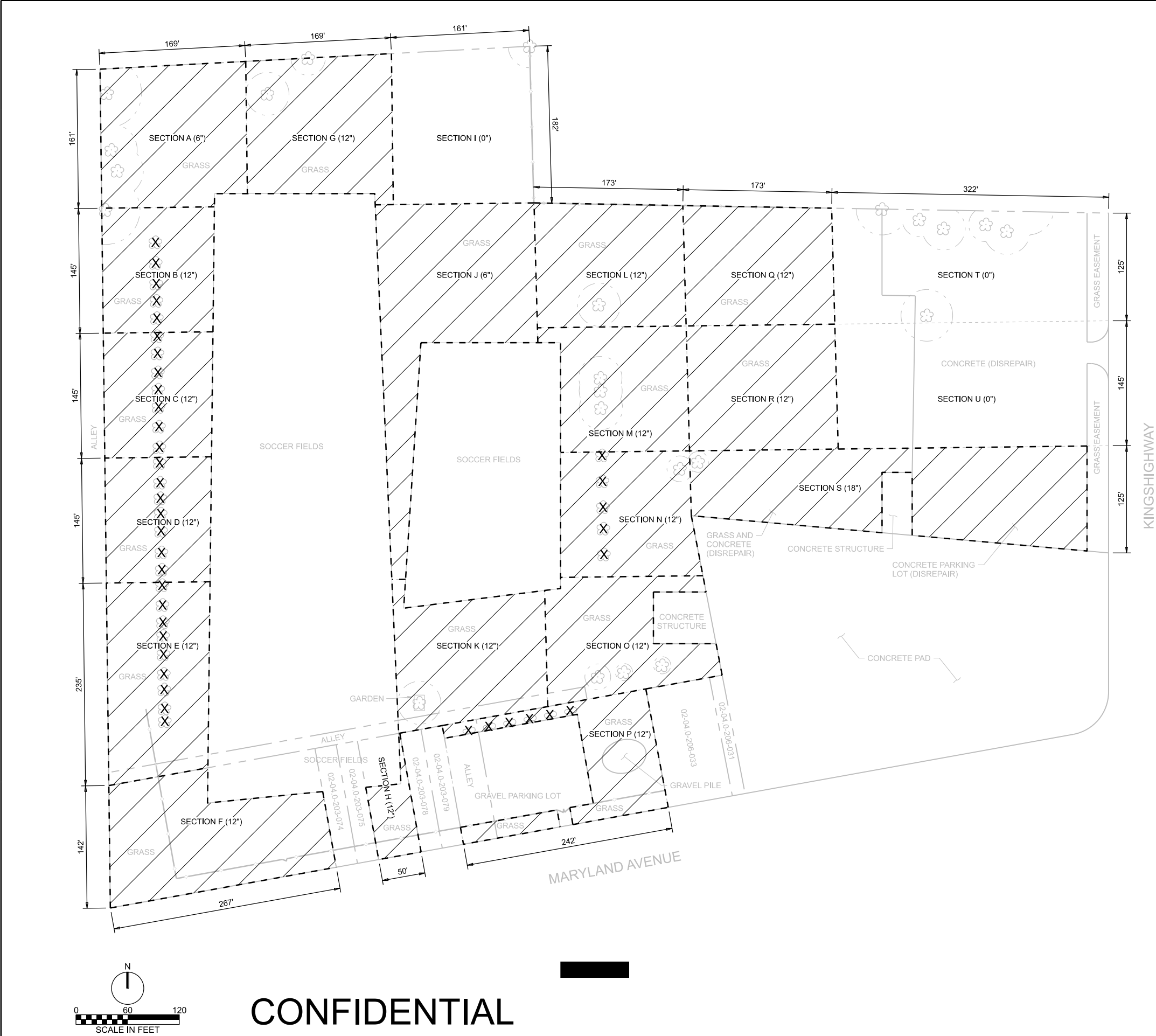
GENERAL NOTES	
1.	PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM MADISON AND ST. CLAIR COUNTIES AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
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4.	AERIAL IMAGERY IS U.S. DEPARTMENT OF AGRICULTURE (USDA) FSA NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP) DATED SEPTEMBER 22, 2019 (RESOLUTION 0.60 METERS) AND MAY NOT REPRESENT CURRENT CONDITIONS.








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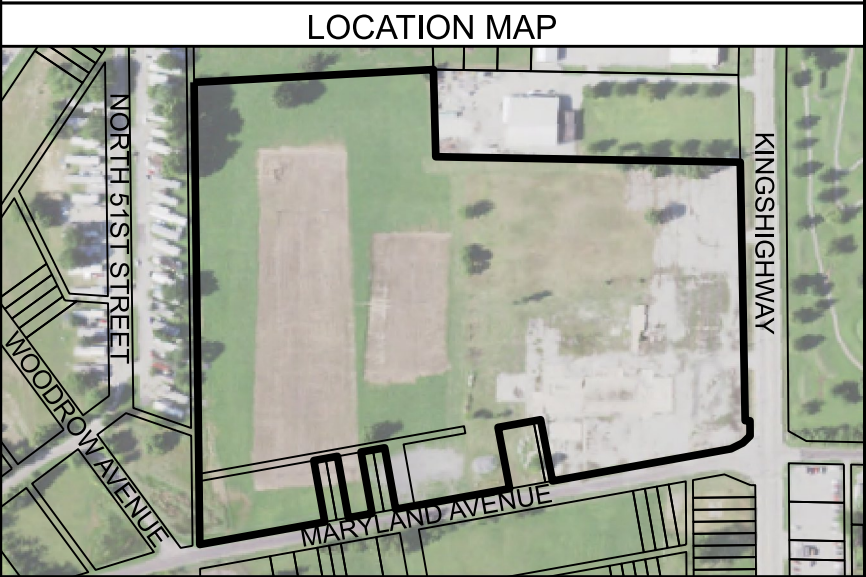
FIGURE C-190
PARCEL [REDACTED] MAPLE AVENUE
[REDACTED] NON-RESPONSIVE
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FINAL DESIGN - ADDENDUM 4 SUBMITTAL MARCH 2022
REVISION - 0





DESIGN INFORMATION											
	A	B	C	D	E	F	G	H	I	J	K
EXCAVATION DEPTH	6"	12"	12"	12"	12"	12"	12"	12"	0"	6"	12"
XRF EXCAVATION BOTTOM	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
XRF LANDSCAPED AREA	NO	YES	YES	YES	YES	NO	NO	NO	NO	NO	YES
SLAG OBSERVED	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	L	M	N	O	P	Q	R	S	T	U	
EXCAVATION DEPTH	12"	12"	12"	12"	12"	12"	12"	18"	0"	0"	
XRF EXCAVATION BOTTOM	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
XRF LANDSCAPED AREA	NO	NO	YES	NO	YES	NO	NO	NO	NO	NO	
SLAG OBSERVED	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
EXCAVATION VOLUME	15,181 CY										
SOD AREA	411,778 SF										

LEGEND					
	TREE		EXCAVATION		PROPERTY LINE
	SHRUB		ITEM TO BE REMOVED		TREE DRIP LINE
					BUILDING
					YARD AREA DIVIDE

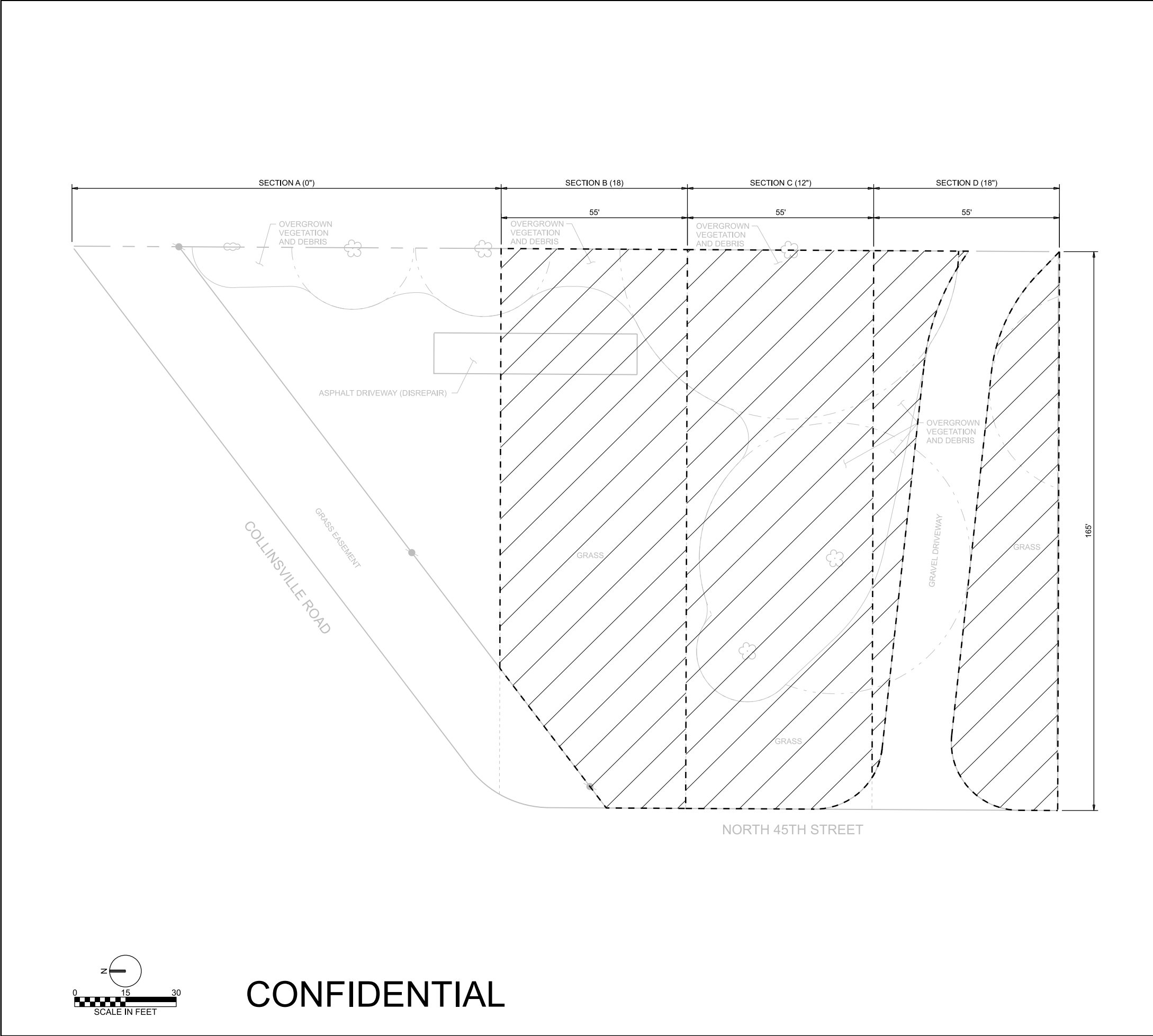


- ### GENERAL NOTES
- PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM MADISON AND ST. CLAIR COUNTIES AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 - PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
 - PROPERTY AND EXCAVATION DIMENSIONS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY AND SHOULD BE CONSIDERED APPROXIMATE. FIELD DETERMINATION OF YARD AREA DIVIDES SHOULD BE BASED ON YARD AREA DIVIDE LOCATION RELATIVE TO PROPERTY FEATURES AS SHOWN ON THE FIGURE.
 - AERIAL IMAGERY IS U.S. DEPARTMENT OF AGRICULTURE (USDA) FSA NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP) DATED SEPTEMBER 22, 2019 (RESOLUTION 0.60 METERS) AND MAY NOT REPRESENT CURRENT CONDITIONS.

- ### PROPERTY SPECIFIC NOTES
- PERFORM XRF SCREENING IN GARDEN AREA AND/OR AROUND TREES OR SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS.

FIGURE C-191
KINGSHIGHWAY
PARCEL [REDACTED] NON-RESPONSIVE
 OLD AMERICAN ZINC PLANT SUPERFUND SITE
 FINAL DESIGN - ADDENDUM 4 SUBMITTAL MARCH 2022
 REVISION - 0





DESIGN INFORMATION

	SECTION A	SECTION B	SECTION C	SECTION D
EXCAVATION DEPTH	0"	18"	12"	18"
XRF EXCAVATION BOTTOM	NO	NO	NO	NO
XRF LANDSCAPED AREA	NO	NO	NO	NO
SLAG OBSERVED	NO	NO	NO	NO
EXCAVATION VOLUME	798 CY			
SOD AREA	22,000 SF			

LEGEND

TREE

SHRUB

EXCAVATION

ITEM TO BE REMOVED

PROPERTY LINE

TREE DRIP LINE

BUILDING

YARD AREA DIVIDE

LOCATION MAP

GENERAL NOTES

1.

2.

3.

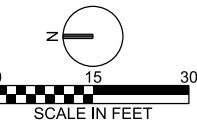
4.

PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM MADISON AND ST. CLAIR COUNTIES AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.

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AERIAL IMAGERY IS U.S. DEPARTMENT OF AGRICULTURE (USDA) FSA NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP) DATED SEPTEMBER 22, 2019 (RESOLUTION 0.60 METERS) AND MAY NOT REPRESENT CURRENT CONDITIONS.



CONFIDENTIAL

FIGURE C-192
[REDACTED] COLLINSVILLE ROAD
PARCE [REDACTED] NON-RESPONSIVE
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FINAL DESIGN - ADDENDUM 4 SUBMITTAL MARCH 2022
REVISION - 0



Attachment 3
Engineer's Estimate of
Construction Cost

Attachment 3

Basis of Estimate Old American Zinc Plant Superfund Site— Surrounding Properties Remedial Design Addendum 4

**Fairmont City, St. Clair County, Illinois
Design and Engineering Services (DES) Contract
Line Item Number (CLIN) 2
Contract 68HE0318D004
Task Order Number 68HE0521F0068**



Project Name: Old American Zinc Plant Superfund Site – Surrounding Properties Remedial Design Addendum 4

Class Estimate: Class 2 Project Budget Estimate

Project Manager: Sara Maihofer/MKE

Senior Technical Consultant: Beth Rohde/MKE

Estimated By: Mark Allen/DEN

Estimate Date: March 3, 2022

1. Purpose of Estimate

This basis of estimate is included as Attachment 3 of the *Old American Zinc Plant Superfund Site, Surrounding Properties Remedial Design Addendum 4, Fairmont City, St. Clair County, Illinois* (CH2M HILL, Inc. [CH2M] 2022; Addendum 4) and should only be viewed in conjunction with the design addendum.

This budget cost estimate provides an engineer's estimate of anticipated capital costs for the excavation, backfill, and restoration of five properties near the Old American Zinc (OAZ) Facility Area (FA), referred to as the surrounding properties. The following sections outline assumptions that apply to this estimate.

This basis of estimate should be reviewed in conjunction with the Microsoft Excel spreadsheet (Attachment A) that outlines the anticipated capital costs for the project.

2. General Project Description

The OAZ Plant Superfund Site is located in the Village of Fairmont City in St. Clair County, Illinois. The site includes a 132-acre FA and surrounding properties where elevated metals concentrations associated with the facility operation were found in different media. The FA is bordered by several commercial and industrial properties, including Garcia Trucking to the west, CSX Intermodal railroad yard to the south, and General Chemicals to the east. The site also includes properties near the FA (surrounding properties), primarily in Fairmont City.

OAZ conducted zinc-smelting operations at the FA from 1916 to 1967. Slag from the smelting operation was cooled by placing the molten material along the northern and western boundary of the FA. The slag stockpiles originally encompassed an area of 15 acres. The FA, including the clinker and other smelting residues on the property, was purchased by XTRA Intermodal, Inc. (XTRA), in 1979. XTRA operated a trucking terminal at the FA until 2003 that included lease, storage, and maintenance of a diverse fleet of trailers. XTRA ground and redistributed the slag stockpiles on the FA to build up and level the former plant site to facilitate its trucking operation. At present, redistributed slag on the FA covers an area of 125 acres, with thickness ranging from 6 inches to 9 feet (ENTACT 2012).

Remediation of the OAZ Plant Superfund Site includes both on-FA and off-FA activities. The budget cost estimate described herein is for the surrounding properties remedial action only (off-FA). Samples collected during various investigations over many years indicate that over 200 properties and 15 alleyways exceeded the cleanup levels for at least one contaminant of concern. The budget cost estimate includes estimated capital costs for the five properties requiring remediation included in this design addendum. Properties and alleyways with elevated lead concentrations were prioritized for removal action and are not included in this design addendum or cost estimate. In addition, properties and alleyways included in the *Old American Zinc Plant Superfund Site Surrounding Properties Remedial Design Final Basis of Design Report, Revision 1* (CH2M 2018; BODR), the *Old American Zinc Plant Superfund Site, Surrounding Properties Remedial Design Addendum 1, Fairmont City, St. Clair County, Illinois* (CH2M 2019; Addendum 1), and the *Old American Zinc Plant Superfund Site, Surrounding Properties Remedial Design Addendum 2, Fairmont City, St. Clair County, Illinois* (CH2M 2020a; Addendum 2) and the *Old American Zinc Plant Superfund Site, Surrounding Properties Remedial Design Addendum 3, Fairmont City, St. Clair County, Illinois* (CH2M 2020b; Addendum 3) are not included in this design addendum or budget cost estimate.

3. Project Objective

EPA's selected remedy for the site is Alternative 4A, as described in the Record of Decision (EPA 2012). The overall strategy for the site is to contain and cover the low-level-threat waste to reduce future human health and ecological risk to acceptable levels.

The remedial action will be performed by EPA's (owner's) representative and a primary contractor (contractor). There will also be supporting contracts for laboratory analysis, waste disposal (if needed), etc. This basis of estimate was created based on the following major activities:

- Mobilization
- Site preparation
- Excavation of soil above applicable cleanup levels from off-FA properties
- Transportation of excavated soils to the FA for direct placement into the consolidation area
 - Depending on construction sequencing, excavated soils may be placed in an excavated soil staging pile at the FA (soil staging pile)
- Containerizing decontamination liquids and water that accumulates in unlined excavations for dust suppression at the FA in areas that have not been remediated
- Backfill and compaction
- Site restoration and maintenance
- Demobilization

3.1 Administration/Subcontractor Oversight

This budget cost estimate assumes that, in addition to the contractor cost shown on the Class 2 Cost Estimate Summary, administration and oversight by the owner's representative will be necessary. The administration and contractor oversight cost percentage has been estimated based on the EPA 2000 Cost Guidance (EPA 2000) document, Region 5 contract, and site experience executing similar work at other residential RA projects.

3.2 Assumptions

This estimate is based on the quantities, sizes, and calculations presented in Addendum 4, and the BODR presents key design assumptions and quantity assumptions. The following exclusions and assumptions supplement Section 3.1 of the BODR and are presented as conditions for the attached budget cost estimate:

- The estimate is based on 2022 pricing. Costs for mobilization, facilities setup, and demobilization are included in this budget estimate, as reflected in the individual line items in the budget cost estimate spreadsheet (Attachment A).
- It is assumed that a separate correlation study and coordination and community relations meetings will not be required for the properties included in this addendum. Therefore, costs for these items are excluded from this budget cost estimate, as stated in the individual line items in the budget cost estimate spreadsheet (Attachment A).
- Drawings used for this estimate were prepared by CH2M (engineer; Addendum 4, Attachment 2).

Old American Zinc Plant Superfund Site – Surrounding Properties Remedial Design Addendum 4

- This budget cost estimate is not an offer to contract for and/or procure the work but does represent the engineer's best opinion of cost before bidding documents are developed and released to prospective contractors.
- The budget cost estimate does not include cost allowance for unforeseen site conditions.

4. Total Capital Cost

The following is a summary breakdown of the estimated total capital cost. See Attachment A for additional detailed information.

Low Range	ESTIMATE RANGE	High Range
-15%	Total \$	+20%
\$5,258,500	\$6,186,500	\$7,423,800

5. Cost Factors

The following cost factors were applied to the estimate:

Estimate Contingency	15%
Bond/Insurance	2.50%
Owner's Representative Markup	5%
Administration and Contractor Oversight	25%
Escalation Rate	0%

An escalation rate was not applied to this cost estimate because it was developed using 2022 pricing, and the work is anticipated to occur in 2022. Attachment A contains the detailed budget estimate.

6. Estimate Classification

This budget estimate is considered a Class 2 estimate as defined by AACE International. It is considered accurate to -15%/+20% based on the current level of the design and design addendum documents.

The budget estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final cost of the project will depend upon competitive market conditions, implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein.

7. Cost Resources

The following is a list of the various cost resources used in the development of the rough order of magnitude estimate:

- CH2M engineers' estimate with assumptions as noted in supporting tables.
- HCSS Heavy Bid Estimating Software, Version 2021.2, was utilized to develop the estimate.
- Estimator judgment and experience.
- Quantity takeoff of anticipated activities.
- Quantities have been priced using a detailed built-up approach. Crews were built up using Davis-Bacon Act labor rates for St. Clair County, Illinois. Construction equipment costs were based on 2022 Blue Book rental/cost recovery rates for Illinois. Materials were based on budgetary quotations.
- Production rates were based on the CH2M estimator's experience and previously estimated rates for the project. Other items were based on RSMeans Cost Data and bids received for recent similar work.

Oversight labor unit prices reflect a burdened rate, including the following: workers compensation, unemployment taxes, fringe benefits, and medical insurance.

8. Estimate Methodology

This budget cost estimate is considered a bottom rolled-up type of estimate with detailed direct-cost breakdown of labor, materials, and equipment. Non-binding cost quotations for materials and services were obtained when possible. Estimator judgment and experience were used to price materials and services whenever non-binding cost quotations were not available. The estimate may include allowance cost for certain components of the estimate (that is, weather delays, production restraints, etc.).

9. Labor Costs

This budget cost estimate is based upon current local knowledge of construction labor rates. Labor costs were estimated using Davis-Bacon Act labor rates for St. Clair County, Illinois.

10. Sales Tax

This budget estimate does not include sales tax separately; cost for applicable sales tax is included in the individual line items.

11. Works Cited

CH2M HILL, Inc. 2018. *Old American Zinc Plant Superfund Site Surrounding Properties Remedial Design Final Basis of Design Report, Revision 1*. December.

CH2M HILL, Inc. (CH2M). 2019. *Old American Zinc Plant Superfund Site, Surrounding Properties Remedial Design Addendum 1, Fairmont City, St. Clair County, Illinois*. July.

Old American Zinc Plant Superfund Site – Surrounding Properties Remedial Design Addendum 4

CH2M HILL, Inc. (CH2M). 2020a. *Old American Zinc Plant Superfund Site, Surrounding Properties Remedial Design Addendum 3, Fairmont City, St. Clair County, Illinois*. July.

CH2M HILL, Inc. (CH2M). 2020a. *Old American Zinc Plant Superfund Site, Surrounding Properties Remedial Design Addendum 2, Fairmont City, St. Clair County, Illinois*. January.

CH2M HILL, Inc. (CH2M). 2020b. *Old American Zinc Plant Superfund Site Surrounding Properties Remedial Design Addendum 3*. July.

CH2M HILL, Inc. (CH2M). 2022. *Old American Zinc Plant Superfund Site Surrounding Properties Remedial Design Addendum 4*. March.

ENTACT. 2012. *Final Feasibility Study Document for the Old American Zinc Plant Site, Fairmont City, Illinois*. February.

U.S. Environmental Protection Agency (EPA). 2012. *Record of Decision, Old American Zinc Plant Superfund Site*. September.

U.S. Environmental Protection Agency (EPA). 2000. *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*. July.

Attachment A
Budget Cost Estimate Spreadsheet

Attachment 3. Unit Rates for Anticipated Property Excavation, with Final Seeding of Excavated Soil Staging Pile
Old American Zinc Plant Superfund Site Surrounding Properties, Addendum 4

Item	Qty	Unit ^a	Unit Price	Total (Rounded)		Notes
Preconstruction Activities	1	LS	\$ 3,436	\$	3,400	Assumes that properties in the addendum will be performed under the same Work Pan, Health and Safety Plan/Activity Hazard Analyses, schedule, training, premobilization submittals, etc. as the properties and alleyways included in the Revised Final Design and Addendums 1, 2 and 3. Per email from EPA on 1/31/2022, includes costs for minor revisions and updates for Addendum 4 properties.
Correlation Study	1	LS	-	-	-	Assume that properties in the addendum will be performed under the correlation study completed for the properties and alleyways included in the Revised Final Design and Addendums 1, 2, and 3.
Coordination Meeting	1	LS	-	-	-	Coordination meeting with city, county, and township representatives. Per email from EPA on 1/31/2022, assume additional meeting(s) for the properties included in Addendum 4 are not needed. Estimated costs for this meeting were included in the Revised Final Design and therefore are excluded from the addendum.
Mobilization and Demobilization	1	LS	\$ 78,617	\$	78,600	Mobilize and demobilize equipment and materials to site and prepare staging areas.
Setup Facilities	1	LS	\$ 20,370	\$	20,400	Setup construction trailer, temporary soil erosion and sedimentation control measures, facilities, stockpile areas, parking areas.
Community Relations, three (3) mtgs	1	LS	-	-	-	Assume three (3) public meetings throughout the course of construction. Each meeting included labor for preparation and attendance. Per email from EPA on 1/31/2022, assume additional meeting(s) for the properties included in Addendum 4 are not needed. Estimated costs for this meeting were included in the Revised Final Design and therefore are excluded from the addendum.
Air Monitoring	120	DY	\$ 546	\$	65,500	Labor, equipment, and materials to conduct air monitoring at residential properties included in the addendum and the Facility Area throughout the project construction.
Initial Preconstruction Meeting	5	EA	\$ 793	\$	4,000	Document existing property condition with digital photos and videos. Attendees include owner's representative, contractor, and landscaping subcontractor to prepare plant inventory.
Second Preconstruction Meeting	5	EA	\$ 456	\$	2,300	Document Property Owner approval of the work to be performed. Attendees include owner's representative, contractor, and landscaping subcontractor to prepare plant inventory.
Clearing and Site Preparation at Properties	5	EA	\$ 1,698	\$	8,500	Clear & Grub grasses and root systems, removal of trash, debris, shrubs, swing sets, benches, and other obstructions.
Transport Yard Waste - Mixed	3	TN	\$ 65	\$	200	Transport of trees, shrubs, miscellaneous wood, metal, and debris. Assume 0.5 ton per property.
Tree Removal (2"-4" dia)	33	EA	\$ 472	\$	15,600	Based on actual costs incurred on a similar project. Includes stump removal.
Excavation	16,384	BCY	\$ 91	\$	1,492,700	Excavation with a small excavator and some by hand. Signage and protective measures for pedestrian traffic on sidewalks or streets, as required. SESC measures as required. Assumes excavation to 30-inches will not be required for any Addendum 4 properties because deepest excavation depth is 18" based on sampling results.
Demarcation Fabric	-	SF	\$ 2.13	\$	-	High visibility fencing for excavations completed to 30 inches, and XRF screening results are above screening criteria. Estimated based on COC concentrations at maximum sample depth. Deepest excavation for Addendum 4 properties is 18" based on sampling results; therefore, it is assumed demarcation fabric will not be needed for any Addendum 4 properties.
Transport Material to Facility	22,938	TN	\$ 10	\$	230,100	Transportation of soil to the Facility Area. Conversion from bank cubic yards (BCY) to ton (TN) based on what is being seen on other similar projects in the region.
Stabilize and manage Staging Pile	1	LS	\$ 32,398	\$	32,400	Labor, equipment, and materials to slope, shape, and manage material from addendum properties in the staging pile at the Facility Area. Assumes 1.1 acre footprint with 4 inches of topsoil placed over staging pile before hydroseeding. Includes costs for additional topsoil and hydroseeding of excavated material from properties included in addendum.
Backfill - General	8,114	CY	\$ 72	\$	582,700	Includes assistance with quality assurance/quality control (QA/QC) sampling, purchase/delivery, installation, compaction, and density testing of general backfill.
Backfill - Topsoil	8,257	CY	\$ 85	\$	700,500	Includes assistance with QA/QC sampling, purchase/delivery, and installation of topsoil.
Backfill - Select Topsoil	8	CY	\$ 94	\$	800	Includes assistance with QA/QC sampling, purchase/delivery, and installation of select topsoil.
Backfill - CA-6 Aggregate	9	TN	\$ 87	\$	800	Includes assistance with QA/QC sampling, purchase/delivery, and installation of gravel (IDOT CA-6).
Street Sweeping	5	MO	\$ 7,453	\$	37,300	Performed from start of excavation through topsoil placement for properties included in addendum.
Landscape - Supply/Plant Perennials	-	EA	\$ 52	\$	-	Perennials are not present on any Addendum 4 properties.
Landscape - Supply/Plant Shrubs	6	EA	\$ 171	\$	1,000	HCSS Estimate.
Landscape - Supply/Plant Trees	33	EA	\$ 620	\$	20,500	Material costs obtained from local nursery's; production rates from RSMeans; and actual unit rates that reflect rate that are currently being charged by the subcontractor in the field.
Landscape - Warranty/Replacement	1	LS	\$ 2,580	\$	2,600	Based on RSMeans. Assume 12% die off. Includes perennials, shrubs, and trees.
Restoration - Sod Placement and Maintenance	446	MSF	\$ 955	\$	425,900	Includes 4-week maintenance/watering period for each property (for up to a total of 10 watering events per property).
Restoration - Concrete Repair	388	CY	\$ 673	\$	261,100	Assume 10 feet of repair at each property where access will occur from/over sidewalk. Assume 6 inches thick and 4,500 pounds per square inch. Also includes replacement of existing concrete in disrepair at properties.
Restoration - Asphalt	1,000	SF	\$ 4	\$	4,000	Restoration of any damaged asphalt during backfill and restoration activities. Assume 3-inches thick. IDOT A-3 surface material. Also includes replacement of existing asphalt in disrepair at properties.
Fence Replacement - Chain Link	16	LF	\$ 145	\$	2,300	Assume 2 8-ft panels replaced at 1 property. Includes separate mobilization by fencing sub to come out and install the fence panels.
Post Construction Meeting	5	EA	\$ 318	\$	1,600	Document issues identified during work, outstanding punch list items, and substantial completion at the property. Attendees include owner's representative, contractor, and landscaping subcontractor.
Analytical Sampling	20	EA	\$ 1,253	\$	25,100	Initial and QA/QC samples for general backfill, topsoil, etc.
XRF Rental	4	MO	\$ 7,547	\$	30,200	X-ray fluorescence (XRF) rental for properties included in addendum. Make/Model: Niton XL3t 800. www.kwipped.com
Payment and Performance Bond	2.50%	of	\$ 4,050,100	\$	101,300	
Contingency	15%	of	\$ 4,050,100	\$	607,500	
SUBTOTAL CONSTRUCTION				\$	4,758,900	
Optional Items						
Utility Locates	1	EA	\$ 350		NA	Unit pricing for utility locating, if determined necessary by owner's representative.
Surveys	1	DY	\$ 2,500		NA	Unit pricing for surveying, if determined necessary by owner's representative. Assumes a minimum 10 by-10 foot grid and then use of a level and rod to measure elevations.
Excavated Soil Staging Pile Management	1	LS	\$ 5,910		NA	Labor, equipment and materials to shape/compact stockpile and removal/placement of poly sheeting on working face, as determined necessary by owner's representative. Assumes work conducted during excavation activities for 16,384 cy of material (approximately 25 days).
Project Management/Construction Management						
Administration/Contractor Oversight	25%	of	\$ 4,758,900	\$	1,189,700	CM, H&S, and CQM onsite, PM time
Owner's Representative Markup	5%	of	\$ 4,758,900	\$	237,900	per contract rates
Total Capital Cost:				\$	6,186,500	
CLASS 2 RANGE:			20%	\$	7,423,800	
			-15%	\$	5,258,500	

^a EA = each; LS = lump sum; TN = tons; DY = days; BCY = bank cubic yards; SF = square feet; CY = cubic yards; MO = months; MSF = thousand square feet; LF = linear feet
This construction cost estimate is not an offer for construction and/or project execution. The construction cost estimate for this Design is an Association for the Advancement of Cost Engineering (AACE) Class 2 estimate and is assumed to represent the actual total installed cost. The estimate above is considered control-level cost estimating, suitable for use in project budgeting and planning. This estimate has been prepared with partial design and engineering calculations. The level of accuracy for the class of estimate defines the upper and lower ranges of the cost estimate. It is based upon the level of design detail and uncertainty associate with that level of detail. For a Class 2 estimate, the accuracy range is +20% to -15%. It would appear prudent that internal budget allowances account for the highest cost indicated by this range as well as other site specific allowances. The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific financial decisions to help ensure proper project evaluation and adequate funding.